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Illinois Governor James R. Thompson delivers address at ceremonies dedicating Granite City Steel Co. wastewater treatment plant. Photo story on pages four and five.

INSIGHT

Containing Potentially
Hazardous Waste

by Leo M. Eisel



Most segments of American industry produce potentially hazardous waste of some type as a result of manufacturing processes. Illinois EPA estimates that industry in this state alone produces approximately 14 million tons of potentially hazardous waste each year.

Our society has learned that many of these industrial materials should be isolated to prevent their entrance into the environment. This was not the case in past years, and traces of many industrial pollutants have been found throughout the environment, as well as in our own bodies.

Today it is necessary for these substances to be safely and strictly managed in order to prevent further contamination of the environment.

AGENCY ACTIONS ON POTENTIALLY HAZARDOUS WASTE

In 1972, Illinois EPA became involved in regulating industrial solid waste, by allowing specially-designed landfill sites to safely handle and dispose of such pollutants. The program has gradually expanded and today there are many disposal sites for this purpose.

Also in 1972, a special waste permit system was instituted by Illinois EPA and 36 permits were issued that year. That system has grown and we project that this year some 1400 special waste permits will be issued.

In addition to disposal, there are many facilities in the state which are actively reclaiming products, such as solvents and oils, and we promote this type of activity.

ONLY THE TIP OF THE ICEBERG

Illinois EPA efforts have allowed the safe disposal of more than two million tons of industrial waste annually. Sadly, this appears to be only the tip of the proverbial iceberg. The Agency estimates that each year 12 million tons of potentially harmful industrial waste are still being disposed of in an unknown manner, and possibly causing contamination of the environment. These toxic, volatile, and reactive wastes are simply not accounted for. At present, they cannot be traced.

What happens to these wastes? They are dumped behind factories, into city sewer systems, at clandestine dumps, and even along back roads in the middle of the night.

We estimate that approximately 200,000 tons of industrial and other hazardous waste material is annually brought into Illinois from other states. Therefore, in comparison with the estimated 12 million tons, of Illinois generated industrial waste which "disappears" each year, this 200,000 tons is relatively small.

OUR ANSWERS TO THE PROBLEM

We at Illinois EPA believe that the key to solving this problem is a comprehensive industrial waste "tracking system." If we can track hazardous or dangerous industrial wastes from their point of manufacture to their point of disposal, we can insure that a much greater quantity of industrial waste will be managed.

Although both state and federal governments are concerned about the regulation of potentially hazardous waste, current regulations do not appear to be adequate. Illinois EPA has taken the initiative in our state. A set of special waste hauling regulations have been submitted to the Illinois Pollution Control Board for adoption under the state Environmental Protection Act. (continued on page eight)

Air Pollution Permit Application Forms Revised and Clarified

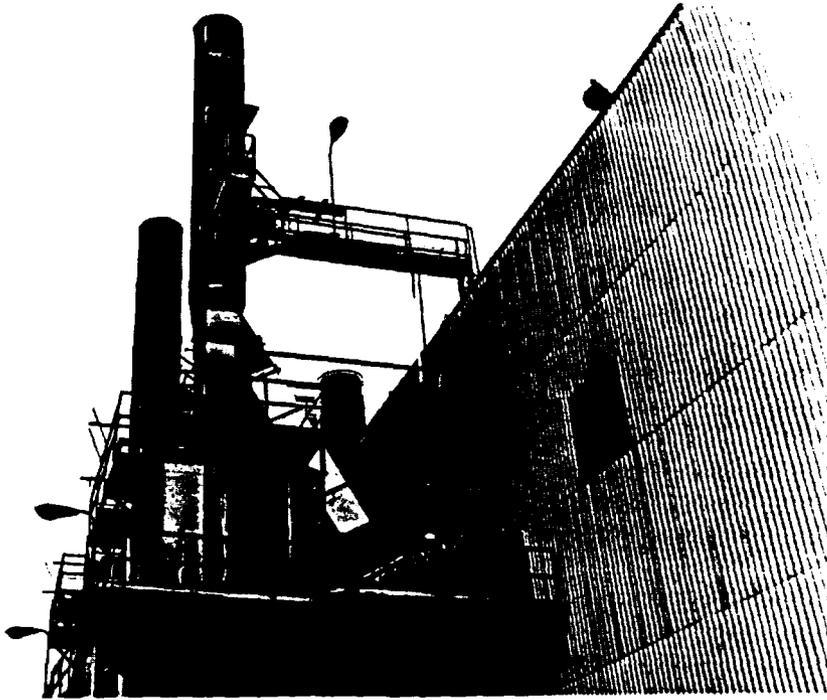
The Division of Air Pollution Control has revised its permit application forms. The revised forms contain an important new request, which is for information such as emission rate, control efficiency, etc., for both maximum and average operation of source equipment. This information will provide the Illinois EPA with a more accurate understanding of the impact of industry on ambient air quality.

The revised forms also request certain additional information, readily available to an applicant, in order to reduce the likelihood that an application will be rejected for insufficient information. Also important is that the revised forms clarify certain areas that were found unclear in previous forms. The revised forms should be a great improvement for both applicants and the Agency.

The additional information requested in the revised forms will not be required in permit applications until Aug. 1. Until that time the outdated forms will be accepted. If an outdated form is used after Aug. 1, missing information will be requested as necessary.

There has been some concern about how the revised forms relate to the renewal of operating permits. "Application for Renewal of an Operating Permit," form APC-205, has not been changed. In addition to this form, a renewal application must include only the appropriate revised forms to describe changes to a particular operation, in other words, forms describing any new control equipment and emission sources and any changes to existing equipment. It will not be necessary for an applicant to resubmit his original application on the revised permit forms.

Caterpillar-Joliet's Efforts to Remove Sulfur Dioxide



A few years ago, when impending national shortages of natural gas and oil came to light, the management of Caterpillar Tractor Company reassessed its long-range energy needs.

Coal was the most abundant and easiest obtainable energy source for Caterpillar, which has major manufacturing facilities in the Peoria area, Aurora, Decatur and Joliet. However, for the company to have continued burning high sulfur content Illinois coal by then-present methods would have meant exceeding newly-imposed sulfur dioxide emission standards.

"Back in 1970, there just was no proven technology available to adequately remove the sulfur dioxide," says Wilbur W. Dodge, who heads Caterpillar's environmental control programs for the company's facilities.

The company was faced with two alternatives — attempt to establish a dependable long term source for the so called "clean" fuels or develop a method of flue gas desulfurization that would allow use of dependably available Illinois high sulfur coal. The latter alternative was chosen

when surveys at that time indicated the clean fuels simply were not available on a basis that would assure uninterrupted plant operations.

In 1972, the company and Zurn Industries, Inc., began developing a prototype system, which was installed on two coal-fired boilers that produce a total of 180,000 pounds of steam per hour for heating operations in the Joliet plant.

Scrubbing, regeneration and sludge removal are the three basic phases of the prototype, which is called a double-alkali system because it utilizes effects of lime and caustic soda.

At the bottom of the Joliet plant's smokestacks are the scrubbers, which appear as large metal boxes with tapering tops. Inside them, sulfur dioxide is turned into water soluble sulfur compounds by mixing a caustic soda solution with flue gases. This process produces clouds of water vapor above the smokestacks, which many people mistake for pollutants.

Regeneration takes place in a separate building, to which the sulfur-bearing solution is piped. A

water and lime mixture is combined with the sulfur solution to form insoluble calcium compounds, primarily gypsum, which is routed into two large round clarifier tanks where make-up caustic soda is added. The scrubber liquid is returned to the first step for further use.

The settled gypsum sludge is piped to large vacuum filters, where it is dried and carried by conveyors to large disposal containers. Trucks haul the inert, gray sludge to IEPA-approved landfills. At peak capacity, about 70 tons of sludge are produced and disposed of each day.

"Every four tons of coal burned produces about one ton of sludge," according to Dave Beck, environmental coordinator, Caterpillar-Joliet. "We encourage present studies underway to discover beneficial uses of the sludge, which is mostly gypsum."

Today, Caterpillar is undergoing final developmental testing of the system. Last year, the Joliet plant removed sulfur dioxide from 69 per cent of the coal it burned.

The company hopes that the prototype system proves to be successfully workable. Similar units are being developed for other Caterpillar facilities.

During the heating season, four specially-trained operators monitor the system around-the-clock.

The systems are not without their problems and much work is yet to be done to perfect them to an acceptable level of operation. In particular, the removal efficiency of particulates must be improved considerably to meet even minimum requirements.

"The best answer," says Dodge, "will be to remove the sulfur before the coal is burned, and Caterpillar is hopeful that increased funding of research and development of viable methods will take place to reach this goal in the next decade or sooner.

Caterpillar policy allows groups to visit the plant and see its pollution control system.

GRANITE CITY STEEL WASTEWATER PLANT DEDICATION



The dedication ceremony was a significant occasion for (left to right) Leo M. Eisel, Director, Illinois EPA; Donald Cairns, Vice President, Granite City Steel; and Representative Monroe Flinn, Cabokia, Chairman of the House Environment, Energy and Natural Resources Committee.



Granite City Steel's wastewater recycling pumping station.

"Clean water speaks louder than words," said Governor James R. Thompson at the dedication of the Granite City Steel Company's new wastewater treatment plant on July 7. "And the fish in Horseshoe Lake are better than a thousand press releases..."

The Granite City facility houses the largest wastewater treatment system in the bi-state St. Louis area. It provides advanced, third-stage treatment for the 25 million gallons of water the steelworks discharges daily into nearby Horseshoe Lake, which covers some 2200 acres in St. Clair County. The quality of the processed discharge is 99.9 per cent cleaner than the water originally drawn from the Mississippi River, according to Dr. Donald F. Cairns, Granite City Steel's Vice President for Environmental Quality Control.

In converting iron ore to flat, rolled steel products, Granite City Steel, a Division of National Steel Corporation, uses as much water — up to 70



(left to right) Illinois EPA Division of Water Pollution Control personnel: Robert Schleuger, Collinsville Regional Supervisor; Bharat Mathur, Southern Area Permits Manager; and William Busch, Field Operations Manager, explaining a point to Dale Bryson, Deputy Director, Enforcement Division, USEPA Region V.



Guests at the dedication ceremonies include Evert Steele, Rep. James McPike and Rep.

HEEL COMPANY'S TREATMENT INDICATED

million gallons per day — as a city with a population of 400,000. By recycling about 35 million gallons of water daily, however, the plant has been able to halve its water intake needs.

IEPA Director Leo M. Eisel accompanied the Governor to the dedication ceremony.

"I'm here today for two very important reasons," the Governor told the gathering, which included steel industry officials and members of the General Assembly. "One: I like clean water, and Two: I like jobs in Illinois."

"Whenever I find a corporation which provides both of these at the same time, I think they deserve a pat on the back from State Government."

Commending "the concern of Granite City Steel for the quality of life in the Metro area," Governor Thompson thanked the company for demonstrating "that progress and jobs and the environment can be made to walk hand in hand."



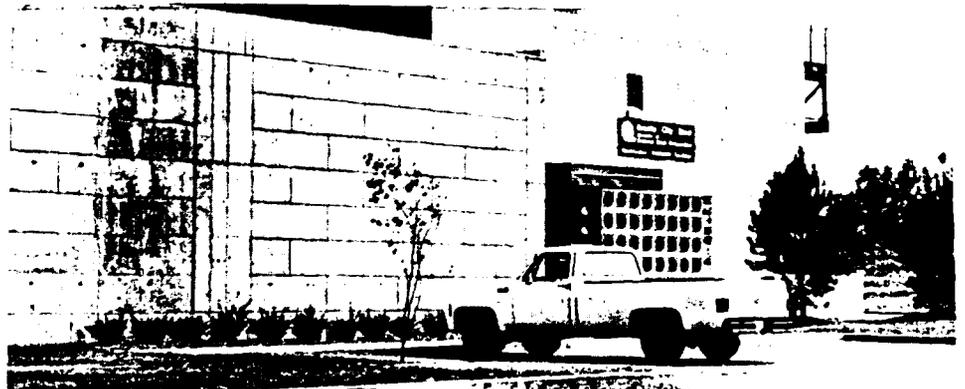
(left to right) Howard Love, President of National Steel Corp., and Governor Thompson learn details of the plant's control room from Donald Cairns, Vice President, Granite City Steel Co.



Flume of processed water and Horseshoe Lake.



State Senator Sam Vadalabene, Representative [unclear], Large tanks contain chlorine.



Facade of new wastewater treatment facility.

What is a sewer ban?

Q: *What is a sewer ban?*

A: A sewer ban is a method of pollution control used by regulatory agencies to enforce effluent and water quality standards where wastewater treatment plants or collection systems are inadequate.

Q: *How does it work?*

A: State regulations require permits for the construction and operation of new sewers. When a sewer ban is in effect, the necessary permits to construct additional new sewers must be denied until treatment plant or sewer collection system limitations are corrected. By temporarily halting the construction of new connections to a faulty existing sewage system, the further loading of the system is checked, and increased dangers of water pollution are prevented. A sanitary district (or other wastewater treatment or transportation authority) under an Agency sewer ban is on "restricted status."

Q: *Is it effective?*

A: The sewer ban is probably the most effective means of enforcing effluent and water quality standards against municipalities. Experience over the years has shown that formal legal enforcement against municipalities is impractical. Monetary penalties are counter-productive; most often funds are low, and could be better used for the improvement of the inadequate wastewater treatment facilities. And prosecution of city officials for pollution violations is unreasonable.

Thus, the sewer ban continues to be the most effective, practical and reasonable pollution control/abatement tool applied to municipalities.

Q: *Who uses this tool?*

A: State regulatory agencies, such as Illinois EPA, have the power

to impose, or to force a local government to self-impose, a moratorium on local jurisdictions. The federal government has, through Public Law 92-500 and other legislation, helped give states the necessary enforcement power; however, the federal government seldom directly imposes a moratorium.

A 1976 HUD survey of 333 jurisdictions "under ban" found that 79 percent of those bans were imposed by state agencies. Local government accounted for the remainder, with the exception of 2 percent attributed to the federal government.

What is a sewer ban?

Q: *Is this something new?*

A: There has been a permit program in Illinois since 1932 — first under the Sanitary Water Board (1929-1970) and since its establishment, under the jurisdiction of the Illinois EPA. The goal of the permits programs has always been to assure the construction of properly designed sewers and waste treatment facilities to prevent water pollution. The policy of restricting extensions to public sewer systems which have reached their capacity goes back more than 20 years in Illinois.

Q: *For what reasons are sewer bans imposed?*

A: In 85 percent of the cases studied in the 1976 HUD survey, the poor quality of the effluent was due to inadequate treatment facilities. The main cause for these plants' inferior production capacity was hydraulic overloading due to high infiltration, rapid population growth, and industrial loading.

Q: *How can I find out which jurisdictions are on restricted status?*

A: Rule 604 of the Illinois Pollution Control Board's Water Pollution Regulations requires the Illinois EPA to publish and make available to the public (at least quarterly) a list of communities on restricted status and critical review.

Q: *What is critical review?*

A: Critical review is an early warning to communities whose facilities are approaching their capacity that restrictions to additional loads will be imposed unless appropriate expansion is implemented.

The engineering staff of the Permits Section, Division of Water Pollution Control, Illinois EPA, will respond to telephone or written inquiries to check records on the current capability of any community in the state to accept additional waste load. The accelerated state construction grants program, aided by a USEPA-approved priority scoring system, provides a rating factor which recognizes the pollution potential of overloaded facilities.

If the problem is caused by poor plant operation, the Division's Field Operations staff will provide operator assistance in restoring proper functioning.

Q: *What is a tap-on sewer ban?*

A: Tap-on sewer bans are much more restrictive, imposed by the Illinois Pollution Control Board. Under a tap-on sewer ban, newly constructed offices and dwellings are not allowed to connect to, or "tap on" to existing sewage systems.

Q: *How can sewer bans be avoided?*

A: Most sewer bans are the result of inadequate planning for future needs. Plans for necessary expansion should be ready for implementation as soon as existing facilities reach their capacity. As growth continues, so does the need for greater facilities. One method could be the distribution of expansion costs between developers on a "new users pay for needed new capacity" approach.

Prevention is the essence of sewer bans. By checking the increase in further loading on facilities that have reached their design capacity, pollution is prevented. And by planning ahead, sewer bans can also be prevented.

What is a sewer ban?

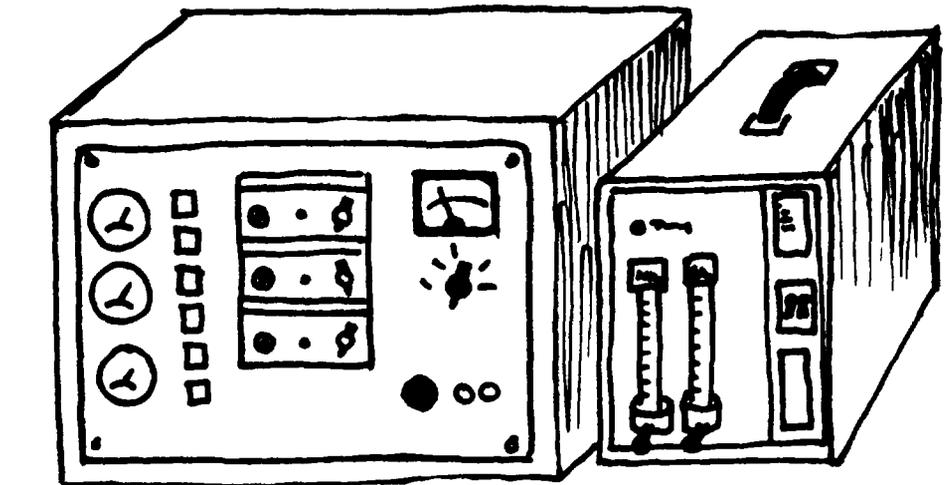
Hope these answers help

Extensive Air Quality Study Completed for Decatur and Macon County

Emission control equipment installed by local industry has played a key role in the reduction of suspended particulate levels in Decatur, according to conclusions of the Macon County Air Quality Maintenance Area report, recently published by the Illinois Environmental Protection Agency's Division of Air Pollution Control.

The report also concludes, however, that current air pollution control programs in use by industry will not be sufficient to reduce suspended particulate levels in a limited area of Decatur below the ambient air quality standards. This area, the east-northeast segment, has recorded annual average levels above the standard since air monitoring was instituted seven years ago.

"The substantial reduction in suspended particle levels already achieved is due mainly to the pollution controls installed by local industries," said Gary Melvin, manager, Air Pollution Control Division, Illinois EPA.



"By the middle of this year, all industry in Decatur will be in compliance with emission control regulations. Many industries have lowered their emissions below what is currently required. But, according to the federal health standards, air quality is still not what it should be in the east-northeast part of Decatur."

The purpose of the study was to determine the nature and extent of the area's air pollution problem and to evaluate existing programs geared toward solving that problem. Long range maintenance of air pollution goals was also an important factor.

"This is the most detailed analysis we have ever performed for an Illinois city," Melvin added. "We used a wide range of data from many sources. An inventory of all sources of air pollution was taken and the total amount of emissions was tallied. Additional information from the Macon County Planning Commission and the city community development department was also used."

The report recommends that each major source of suspended particles be examined to determine if the best control technology is currently being applied. Non-industry sources of suspended particles should also be examined to determine their contribution to the problem.

Macon County is one of six areas in Illinois that has been identified as needing an extensive air quality study because it exceeds or has the potential to exceed ambient air quality standards. The other five areas are Chicago, East St. Louis, Peoria, the Quad Cities (Rock Island, Moline) and Massac County.

The Decatur study is the first to be completed. All others are scheduled for completion by early 1978.

Copies of the Decatur air quality report are available from the Air Resource Analysis Section, Illinois EPA, 2200 Churchill Road, Springfield, Illinois 62706.

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WHAT THE PROPOSED REGULATIONS WOULD MEAN

There are four basic points to the proposed new regulations:

1. They would set up a system of waste hauler permits for those who transport special waste from one point to another.

2. Vehicles and tanks used to haul such special waste would have to be inspected and appropriately labeled.

3. Persons either delivering to a waste hauler, hauling, or accepting from a special waste hauler would be required to keep accessible records of their movement — showing quantities, composition and disposition of the special waste.

4. Most importantly, a "manifest" or bill of lading system would be imposed. Basically, the waste generator would acknowledge the volume and type of material delivered to the hauler, sign a form and forward it to Illinois EPA. The hauler would acknowledge receipt of the waste, sign a form and forward it to Illinois EPA. The disposer would likewise acknowledge receipt of the waste, sign a form and forward it to Illinois EPA. In this manner, the Agency would be able to control waste from "cradle to grave."

By using this "manifest" system of management, these potentially dangerous substances will be isolated from our environment.

In conclusion, it must be pointed out that potentially hazardous wastes are created by all of us. Appliances, metal-plated products, painted products — just about all of our contemporary manufacturing methods involve a substance that might be hazardous, and that remains as part of a waste product. The proper management of these materials at all stages is the only safe and logical alternative for an environmentally enlightened society.

Hot off the press...

A Citizen's Guide to Clean Water Planning

The Division of Water Pollution Control, Illinois EPA, has just published a 28-page booklet, "Citizen's Guide To Clean Water Planning in Illinois."

The publication is quite comprehensive, containing sections on water quality, supply, pollution sources, waste management, sewer systems, federal and state regulatory programs, and the current clean water planning effort. Also included is a helpful glossary for citizens interested in clean water planning.

The new Citizen's Guide is available at no cost by contacting Susan K. Laue, Division of Water Pollution Control, Illinois EPA, 2200 Churchill Road, Springfield 62706. 217/782-3362.



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